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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,667	12/21/2001	Mario Elmen Tremblay	8828	1150

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THE PROCTER & GAMBLE COMPANY
INTELLECTUAL PROPERTY DIVISION
WINTON HILL BUSINESS CENTER - BOX 161
6110 CENTER HILL AVENUE
CINCINNATI, OH 45224

EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 09/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,667

Applicant(s)

TREMBLAY ET AL.

Examiner

Harry D. Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29,31,32,41 and 94 is/are pending in the application.
- 4a) Of the above claim(s) 94 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29,31,32 and 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Status

1. The rejection under 35 USC 112, 2nd paragraph has been maintained.
2. The rejection of claims over Kelley in view of Spence have been maintained.
3. The rejection of claims over Herrington in view of Spence have been withdrawn in view of Applicant's amendments to the independent claims.
4. In view of Applicant's amendments, new art has been found, Kanekuni et al, which more closely reads on the redefined arrangement of anode, cathode and passage. New rejection grounds follow.

Election/Restrictions

5. Newly submitted claim 94 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the prior claims and new claim 94 are directed to related apparatuses. The related inventions are distinct if the (1) the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect; (2) the inventions do not overlap in scope, i.e., are mutually exclusive; and (3) the inventions as claimed are not obvious variants. See MPEP § 806.05(j). In the instant case, the inventions as claimed the prior claims all required a non-barrier electrolytic cell. New claim 94 requires a porous barrier. Thus, the new claim has a materially different design. Furthermore, the inventions as claimed do not encompass overlapping subject matter and there is nothing of record to show them to be obvious variants.

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Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 94 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2, 41 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 41 recites the limitation "said filter" in *lines 1-2*. There is insufficient antecedent basis for this limitation in the claim. The first instance of filter should recite "a filter" and it would be permissible for the second instance (in line 3) to recite "the filter" or "said filter".

9. Claim 2 recites the limitation "said productivity index" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 1, 3, 4, 22, 23 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kelley (US 6,306,281) in view of Spence (US 4,414,070).

Kelley teaches (see figure and abstract) an apparatus for electrolyzing an electrolytic solution including a non-membrane (barrier) cell including an anode and cathode defining a passage formed there between, an inlet port, an outlet port and a direct current supply (not shown in figure, see col. 2, lines 65-67).

Regarding the limitation that the power supply delivers less than about 2.7 watts of power, this limitation is not further limiting on the apparatus claim because the above limitation deals with the manner or method of use of the claimed apparatus. It has been well settled that the manner or method of use of an apparatus cannot be relied upon to further limit claims to the apparatus itself. See *In re Casey*, 152 USPQ 235, and MPEP 2114. The apparatus of Kelley is fully capable of operating at any power requirement. As further evidence that the wattage supplied is a method limitation, it can be seen from examples 1 and 15 that increasing the production rate from 50 cc/min to 78.86 cc/min (30 gallons per day) requires the wattage to be increased from 30 watts to 240 watts. Thus, for a decreased flow rate, one of ordinary skill in the art would have expected to have used a smaller amount of energy, such as the claimed less than about 2.7 watts, and hence, the apparatus of Kelley is capable of operating at less than about 2.7 watts.

Regarding the limitation that the apparatus "achieves a Productivity Index of at least 245 during electrolyzation of said solution", this limitation is not further limiting on the apparatus claim because the limitation deals with the manner or method of use of the claimed apparatus. It has been well settled that the manner or method of use of an

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apparatus cannot be relied upon to further limit claims to the apparatus itself. See *In re Casey*, 152 USPQ 235, and MPEP 2114. The apparatus of Kelley is fully capable of operating in the claimed fashion.

Thus, Kelley does not teach that the passage between the anode and cathode is less than about 0.6 mm in size.

However, Spence teaches (see col. 1, lines 24-29) that the efficiency of electrolytic cells is dependent upon the anode-cathode distance, and that as the distance decreases the efficiency increases.

Therefore, it would have been within the expected skill of a routineer in the art to have modified the apparatus of Kelley to use as small an anode-cathode gap as possible, such as less than 0.6 mm as claimed because Spence teaches that decreased anode-cathode gap improves efficiency.

Regarding claim 3, the apparatus further includes a pump for moving electrolytic solution (figure 1).

Regarding claims 4, it would have been obvious to one of ordinary skill in the art to have recirculated the electrolytic solution because recycling is an obvious engineering design improvement that comes from efficiency and economic design considerations (i.e.-it is within routine skill in the art to recycle fluid through a "reactor" to increase yield). Changing economic considerations do not make obvious expedient into unobvious improvement. *Ex parte Fuller*, 172 USPQ 317.

Regarding claims 22 and 23, it would have been obvious to one of ordinary skill in the art to have added a water sensor for automatically turning the electrolytic cell on

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and off because such automatic switch is an obvious engineering design improvement that comes from efficiency and economic design considerations (i.e.-it is within routine skill in the art to add an automatic on/off control to prevent wasting power when water is not available and to remove any manual activity in the process).

Regarding claim 32, Kelley does not teach the anode surface area is less than 30cm^2 . However, changes in size absent a showing of unexpected results have been held to be mere routine experimentation and within the skill of a routineer in the art. See MPEP 2144.04.IV.A. Therefore, it would have been obvious to one of ordinary skill in the art to have made the electrolytic cell of Kelley small enough to have a anode surface area of less than 30 cm^2 as claimed in order to adjust the total output of the electrolytic cell to the desired amount.

12. Claims 1-4, 22-24, 29, 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanekuni et al (US 5,954,939).

Kanekuni et al teach the invention substantially as claimed. Kanekuni et al teach (see figures 1, 4-9, 11(a) and 11(b), Test 1 (cols. 13-15) and table 1 (col. 25)) an apparatus for electrolyzing an electrolytic solution having a chloride salt comprising at least one non-barrier electrolytic cell having an anode, a cathode and a passage connecting the anode and cathode adjacent to the anode, the passage having a distance between the anode and cathode of less than 0.60 mm, an inlet port in fluid communication with the passage and configured to receive a flow of electrolytic solution, an outlet port in fluid communication with the passage configured to provide an exit for the flow of electrolytic solution having been electrolyzed and a direct current

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power supply providing electrical current between the anode and cathode, whereby the electrical current electrolyzes the electrolytic solution.

Thus, Kanekuni et al fail to teach utilizing a direct current power source which utilized less than 2.7 watts. The closest operating condition shown by Kanekuni et al utilized a 2.9 watt electric power.

However, the watts required to operate the electrolytic cell of Kanekuni et al was dependent upon a number of variables, including the operating voltage (V) and the current density (A/m^2) times the electrode surface area (m^2). One of ordinary skill in the art was aware that (1) the wattage supplied by the power supply was directly proportional to the rate at which the disinfecting chlorine was produced and (2) the rate at which chlorine was produced was directly proportional to the flow rate of water which could be treated by the electrolyzer.

Thus, one of ordinary skill in the art would have realized that the apparatus could have been operated on a smaller scale by reducing the flow rate of water through the electrolyzer when a lesser amount of sterilized water was needed. Hence, for such an instance, one of ordinary skill in the art would have been motivated to have utilized a lower powered direct current supply to prevent extra costs associated with higher powered direct current supplies.

Regarding claim 2, although Kanekuni et al fail to teach utilizing a housing containing both the electrolytic cell and the power supply (see figure 8), it would have been obvious to one of ordinary skill in the art to have added a housing around the

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power supply and electrolytic cell to allow the water sterilization device to be made portable as a single unit.

Regarding claim 3, the apparatus of Kanekuni et al included a fluid movement mechanism for moving water into and out of the cell. Such mechanism was supplied by the various city water apparatus which provides a pressure behind the water source.

Regarding claim 4, it would have been obvious to one of ordinary skill in the art to have recirculated the electrolytic solution because recycling is an obvious engineering design improvement that comes from efficiency and economic design considerations (i.e.-it is within routine skill in the art to recycle fluid through a "reactor" to increase yield). Changing economic considerations do not make obvious expedient into unobvious improvement. *Ex parte Fuller*, 172 USPQ 317. In this instance, it would have been obvious to have recycled the electrolyzed solution to allow for an additional increase in bactericidal chemicals in the solution.

Regarding claims 22 and 23, it would have been obvious to one of ordinary skill in the art to have added a water sensor for automatically turning the electrolytic cell on and off because such automatic switch is an obvious engineering design improvement that comes from efficiency and economic design considerations (i.e.-it is within routine skill in the art to add an automatic on/off control to prevent wasting power when water is not available and to remove any manual activity in the process).

Regarding claim 24, the apparatus of Kanekuni et al included an ac-dc converter (see figure 8).

Regarding claim 29, Kanekuni et al teach (see col. 13) utilizing the device in as a under-sink water purification device (sinks) or a counter-top water purification device (for sterilizing).

Regarding claim 31, the apparatus of Kanekuni et al provided sterilization of the water.

Regarding claim 32, the anode active surface area of Kanekuni et al had a surface area of 30 cm².

13. Claims 5-21 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanekuni et al (US 5,954,939) as applied to claims 1-4, 22-24, 29, 31 and 32 above, and further in view of Weakly et al (US 2002/0157966).

Kanekuni et al do not teach a filter such as activated carbon or resin which can filter out harmless materials.

Weakly et al teach (see paragraphs 35 and 49) a specific filter such as activated carbon or resin which can filter out arsenic.

Therefore, it would have been obvious to one of ordinary skill in the art to have modified the apparatus of Kanekuni et al to include the filter material of Weakly et al because Weakly et al teach that the filter removes arsenic from the treated water which would have further minimized contaminants for the end user of the treated water of the process of Kanekuni et al.

It should be noted that the specific rate or degree of filtration is a method limitation which does nothing to further define the structure in apparatus claims. The apparatus must merely be capable of operating at the specific operating conditions

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which appears to be the case with the apparatus of Weakly et al. The specific filtration properties would have been considered a result effective variable by one having ordinary skill in the art. As such, one having ordinary skill would have routinely optimized the pressure of the chamber to obtain the purification attendant therewith. *In re Boesch* and *In re Aller*.

14. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanekuni et al (US 5,954,939) as applied to claims 1-4, 22-24, 29, 31 and 32 above, and further in view of Beer (US 3,632,498).

The teachings of Kanekuni et al are described above.

However, Kanekuni et al do not teach that the electrode is a foil electrode comprising a group VIII metal.

Beer teaches (see abstract and claims 1 and 3) a composite electrode including a conductive base with a foil of an active material such as palladium, platinum, rhodium, iridium, ruthenium or osmium (group VIII metals) on the surface. Beer teaches that this electrode is useful in processes including purification of water and has a long life, low overvoltage and catalytic properties.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the composite electrode of Beer for the anode of Kanekuni et al because the electrode of Beer is useful in water purification and has a long life, low overvoltage and catalytic properties.

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15. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanekuni et al (US 5,954,939) as applied to claims 1-4, 22-24, 29, 31 and 32 above, and further in view of Graham et al (US 5,937,641).

The teachings of Kanekuni et al are described above.

However, Kanekuni et al do not teach that the electrode is a porous metallic anode.

Graham et al teach (see col. 8, lines 1-23) a porous metallic foam useful in a catalytic converter. The porous foam is capable of withstanding high temperatures and vibrations.

Therefore, it would have been obvious to one of ordinary skill in the art to have used the porous material of Graham et al for the anode of Kanekuni et al because the porous material of Graham et al resists vibrations and also provides a high surface contact area for electrolytic reaction.

Response to Arguments

16. Applicant's arguments filed 27 July 2006 have been fully considered but they are not persuasive. Applicant argued that Kelley does not teach all of the features of the claimed invention.

In response, the Examiner has set forth that Kelley teaches all aspects of the invention as claimed, with certain exceptions as noted in the rejection grounds above. Applicant's assertion that some features are not taught is not found persuasive in view of the clear teachings of Kelley. Particularly, the cell of Kelley has the claimed passage

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connecting the anode and cathode adjacent to the anode of the non-membrane electrolytic cell.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw